Math 212
Requiz 25B

F 18 Nov 2016 / N 20 Nov 2016

Your name: _____

Exercise

(5 pt) Our goal in this exercise is to evaluate the iterated integral

$$\int_{x=-3}^{x=3} \int_{y=0}^{y=\sqrt{9-x^2}} \int_{z=0}^{z=9-x^2-y^2} \sqrt{x^2+y^2}\, dz\, dy\, dx. \tag{1}$$

(a) (1.5 pt) Sketch the region of integration.

(b) (0.5 pt) What kind of symmetry does the region of integration possess? *Hint:* Focus on symmetry about an axis, also known as (fill in the blank) symmetry.

(c) (3 pt) Taking a cue from the Clue Fairy in part (b), write the integral in (1) in appropriate coordinates, and show that it evaluates to $\frac{162\pi}{5} \approx 101.7876$.